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CENTRAL INTELLIGENCE AGENCY
Office of Current Intelligence
5 October 1965

INTELLIGENCE MEMORANDUM

Prospects for Communist Use of
Air-to-Air Missiles Over Vietnam*

1. Since two encounters in June, when MIGs reportedly fired unguided rockets at US aircraft, there has been no further intelligence concerning Communist intentions to use guided air-to-air missiles over Vietnam. The North Vietnamese Air Force, however, is apparently nearing a time when its training and equipment will enable it to take an active air defense role and it is possible that its aircraft armament will include air-to-air missiles.

2. Unguided air rockets have been in the Soviet and Chinese Communist inventory for years, and they are easily mounted on MIG-15s or MIG-17s, either individually or in pods. Early models of the MIG-17, for example, can carry from two to 16 air-to-air rockets, depending on size. Later models of the MIG-17 can carry double this amount.

3. To date there is no evidence that North Vietnam has received any guided air-to-air missiles (AAMs). However, AAMs are small enough to be moved into North Vietnam without detection

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4. The most likely AAM for use in Vietnam would be the Soviet AA-2, nicknamed the Atoll, an infrared heat-seeking missile which is believed to be a copy of the US Sidewinder. The AA-2 is normally associated with the MIG-21 fighter, which has not yet appeared in Vietnam. However, it is a relatively simple missile and could be installed on almost any jet fighter capable of achieving the Mach 0.8 speed necessary for launch--which would include the MIG-15/17 fighters in North Vietnam. Only minor modifications to the aircraft are needed to accommodate AA-2s. The infrared head on the missile itself detects the target and gives the pilot an audio signal; when its intensity becomes sufficient for missile lock-on, the signal changes frequency and level. The only problem remaining is to ensure that the target is within the missile's flight range (5-6 n.m. for the latest model, 2-3 n.m. for the original model) before firing.

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5. The AA-2 missile has been operational in the Soviet Air Force since 1959. There is also reason to suspect that the Chinese Communists have a similar missile, though we have yet to confirm any AAMs in China. We know that they recovered one of the Sidewinders fired by Chinese Nationalist pilots in 1958 (they displayed it in Peking)

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6. The AA-2 system is accurate and reliable but has its shortcomings. Its effectiveness drops sharply against bright cloud backgrounds, in clouds or haze, or when the target is near the direction of the sun. For a true all-weather AAM capability, the North Vietnamese would require either a beam-rider or a semi-active homing missile.

7. The most likely candidate would be the Soviet AA-1 (Alkali),

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Unlike the infrared AA-2, a beam-rider missile requires a specific type of airborne-intercept (AI) radar in the fighter aircraft. The interceptor locks onto the target with its radar and fires the missile, which stays in the center of the radar beam until impact. There now are a few MIG-17PF

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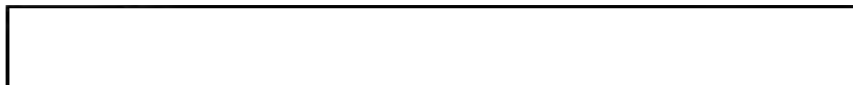
PROSPECTS FOR COMMUNIST USE OF AIR-TO-AIR MISSILES OVER VIETNAM

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